

PATENT COOPERATION TREATY

BERGGREN OY AB

**From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY**

23-08-2004

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL PRELIMINARY
EXAMINING AUTHORITY

(PCT Rule 66)

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Applicant's or agent's file reference BP107835		REPLY DUE	within 60 days from the above date of mailing
International application No. PCT/FI 2003/000812	International filing date (day/month/year) 03.11.2003	Priority date (day/month/year) 04.11.2002	
International Patent Classification (IPC) or both national classification and IPC A23L 1/10 <i>dt. 17.10.2004 /R</i>			
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**WRITTEN OPINION OF THE
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY**

International application No.

PCT/FI 2003/000812

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

This opinion is based on a translation from the original language into the following language English, which is the language of a translation furnished for the purposes of:

international search (under Rules 12.3 and 23.1(b))
 publication of the international application (under Rule 12.4)
 international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this opinion has been established on the basis of (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."*):

the international application as originally filed/furnished

the description:

pages _____ as originally filed/furnished

pages _____ received by this Authority on _____

pages _____ received by this Authority on _____

the claims:

pages _____ as originally filed/furnished

pages _____ as amended (together with any statement) under Article 19

pages _____ received by this Authority on _____

pages _____ received by this Authority on _____

the drawings:

pages _____ as originally filed/furnished

pages _____ received by this Authority on _____

pages _____ received by this Authority on _____

a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. The amendments have resulted in the cancellation of:

the description, pages _____

the claims, Nos. _____

the drawings, sheets/figs _____

the sequence listing (*specify*): _____

any table(s) related to the sequence listing (*specify*): _____

4. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages _____

the claims, Nos. _____

the drawings, sheets/figs _____

the sequence listing (*specify*): _____

any table(s) related to the sequence listing (*specify*): _____

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**Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-4, 6, 8-9, 16-20	(no)
	Claims		
Inventive step (IS)	Claims	1-23	(no)
	Claims		
Industrial applicability (IA)	Claims		
	Claims		

2. Citations and explanations:

The invention relates to a method for preparing a starch-containing product in particle form. The object of the invention is to provide a solution to the problems in treating flour, regarding mass transfer, pulverization and silting and to decrease the tendency of a material containing starch to become rancid because of fat oxidation. The method according to the invention involves treating a material containing starch so as to damage the starch granules and to partially release their amylase and amylopectin so that lipids are bound to them. The plastic mass obtained by the treatment is dried and the dried mass is broken up in particles.

Reference is made to the following documents:

D1: Starch/Stärke, Volume 53, 2001, Antje Becker et al:
"Relevance of Amylose-lipid Complexes to the Behavior of Thermally Processed Starches"

D2: US 20010026828 A

D1 discloses a study wherein the properties of starch/water mixtures that have been heated without shearing have been studied. In the study, samples were prepared by adding water to a starch-containing material, the mixture were heated at 140 °C, freeze-dried and milled with a screen of 1 mm pore diameter. The study showed that amylase-lipid complexes are formed in normal cereal starches after thermal conversion.

In view of D1 the method according to claim 1 and 6, the use according to claim 23 and the starch-containing product according to claim 17 lacks novelty.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

The starch-containing product according to claim 16 differs from the product obtained by the sample preparation described in D1 in that the amount of lipids bound by the starch is at least 2 % as calculated from the amount of starch.

The amount of lipids bound by the starch is not clearly expressed in D1. However, it is stated that some of the starches chosen for the investigation, such as wheat and rice starch, have high lipid contents. It is considered obvious to a person skilled in the art to choose a starch containing material with an appropriate lipid content in the preparation of samples as described in D1. Consequently, the starch-containing material according to claim 16 is considered to be obvious to a person skilled in the art.

The invention according to claim 7 differs from D1 in that the temperature is kept below 105 °C. According to the applicant, observations have shown that this is the maximum temperature, to which the material can be brought in connection with the process without impairing the results.

The optimal temperature as well as amount of energy used must depend on the starch containing material to be processed. It is considered obvious to a person skilled in the art to optimize the process variables to the material being processed. Therefore, the invention according to claim 7 is considered obvious to a person skilled in the art. Similarly, also the method according to claim 5 is considered obvious to a person skilled in the art.

The invention according to claim 1 also lack novelty in view of D2.

D2 describes a process for manufacture of a thickening/binding agent. The process involves extrusion of a starch-containing material, to which water has been added, drying and grinding of the extrudate to obtain a product particle size of between about 0,1 and 3 mm. The thickening agent produced by the process shows an improved solubility and problems with "post-thickening", i.e. the viscosity of the mixture obtained by dispersion thickens over time when the product is not kept at a high and constant temperature, are avoided.

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Continuation of: Box V

The method described in D2 involves the same measures as the method according to claim 1. Although not mentioned in D2, complexes of amylase and/or amylopectin with lipids must be formed also in the method according to D2, since the methods involve the equivalent process steps. It is well known in the art that amylase and amylopectin form complexes with lipids when subjected to heat and/or thermomechanical extrusion such as the treatment described in D2. (See e.g. D1).

Therefore, the method according to claim 1 is not novel with regard to D2. Also the starch-containing product according to claim 16 and 17 lacks novelty.

The subject matters of claims 2 - 4, 8 - 9 and 18 - 20 are previously known from D2. Consequently, the invention according to claims 2 - 4, 8 - 9 and 18 - 20 lacks novelty.

The subject matter of claim 10 differs from D2 in that the particle size of the end product is larger than that of the starting material that is moistened. A larger particle size simplifies the handling of the flour and thereby the problems related to the fineness of the flour are avoided.

The particle size of the starting material in the process described in D2 is not clearly expressed. According to the description and claim 21, the particle size of the end product of the invention is in a range of 0.25 - 2.0 mm. The particle size of flour ground from cereal grains is typically less than 0.25 mm. The product obtained by the process according to D2 may be ground to a particle size of between 0.1 - 3 mm. Thus, the size of the end product is freely selectable within a range that overlaps the desired particle size according to the invention.

Therefore, the invention according to claims 10 and 21 is considered to be obvious to a person skilled in the art.

It is also considered obvious to a person skilled in the art to use any starch-containing material in the preparation of the particles. Consequently, the method according to claim 11 - 14 and the product according to claim 22 are considered

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Continuation of: Box V

obvious to a person skilled in the art.

Also the subject matter according to claim 15 is considered obvious to a person skilled in the art.